

Jan: 22<sup>nd</sup> 1829  
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In  
Inaugural Essay (Exd.)

on <sup>Reptd</sup>  
Intermittent Fever Feb. 27<sup>th</sup> 1829

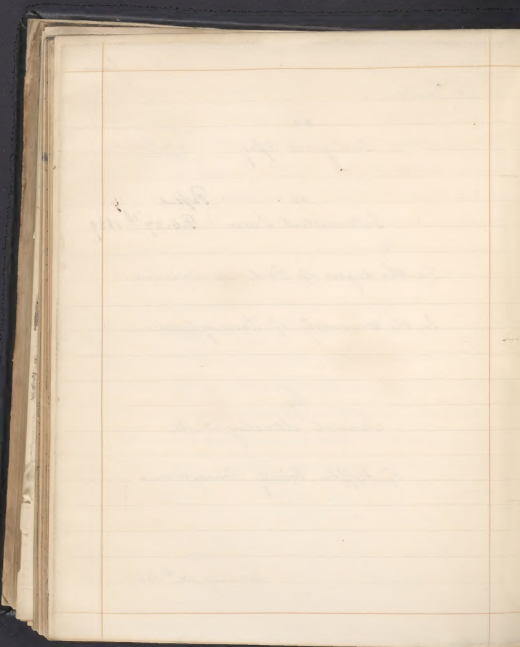
For the degree of Doctor of Medicine

In the University of Pennsylvania

by  
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January 26<sup>th</sup> 1829.



The phenomena of fever have in all ages attracted much attention. Febrile diseases form the great mass of the maladies with which the physician has to contend. The nature of fever however is not clearly known, although it has been a favorite subject of inquiry with almost all writers on the subject. By Hippocrates it was supposed to be a salutary effort of nature to expel some noxious matter. Boerhaave believed it to consist in a lentor or viscidty of the fluids. Hoffman referred it to a diminished energy of the nervous system and Cullen to a spasm of the extreme vessels. More recently fever has been supposed to consist in an engorgement and consequent debility of the capillary vessels. But although the proximate cause of fever be obscure, the phenomena themselves are evidently marked. Those most commonly observed are, a feeling of chilliness, succeeded by



febrile heat of the skin, increased frequency of the pulse, diminution of the secretions, loss of appetite, and weakened muscular power.

These phenomena have been observed to occur in paroxysms more or less distinct from each other, hence the division of fever into intermittent, remittent, and continued, according as the intervals between the paroxysms, are distinct, imperfect, or scarcely perceptible.

A concise account of the character, causes, and cure, of the first of these divisions, or intermittent fever, will be attempted in the following pages.

The paroxysm of intermittent fever is naturally divided into three stages, a cold, a hot, and a sweating stage. In the great majority of cases, these stages succeed each other regularly, in the order in which they have been named, there are not wanting instances however, in which they have followed each other in a different



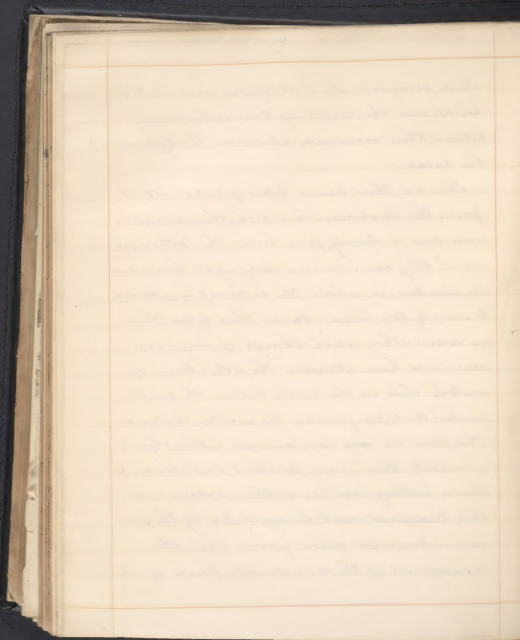
order, or where one of them has been altogether wanting. The symptoms marking the cold stage are, languor, yawning, pain in the back and limbs, a soreness and aching referred to the bones, lividness of the lips and nails, small pulse, coldness beginning in the back and extending over the body, contracted skin, rigors and shivering, breathing hurried and anxious, mental energy impaired, and the exertions diminished. To these symptoms begin to succeed, flushes of heat, full and bounding pulse, head ache, with throbbing of the temples, hot and dry skin, thirst, stomach disordered, the intellect confused, and the urine scanty and high coloured. After this condition has continued for some time, sweat begins to appear on the forehead and upper lip, and gradually extends over the whole body, attended with a remission of all the symptoms.





These paroxysms return at regular and stated periods, and the length of time intervening between their occurrence, determines the type of the disease.

There are three leading types of intermittent fevers; the Quotidian, in which the paroxysms occur once in twenty four hours, the Tertian, in which they occur once in forty eight hours, and the Quartan, in which the interval is extended to seventy two hours. Besides these types, there are several others which though of very rare occurrence have attracted the attention of writers, these are the double tertian, the double quartan, the triple quartan, the quintan, sextan, &c. These forms are very rare, and are rather objects of curiosity than of any practical importance, as there is nothing peculiar in their nature, and their treatment must be regulated by the same general principles which govern us in the management of the more common forms of the



Alcace. I cannot estimate the Alcace as the most common type, as it is also the most marvellous. Its parorgasm was somewhat more plainly marked, and there were no stages distinct and evident. The second was a median of the day, and in length as a mean between that of the quartan and an Indian fever, being longer than those of the former, and not so long as those of the latter.

Next in frequency to the Alcace, is the quotidian. Its cold stage is the shortest, though in this union its parorgasm is longer than that of either of the other forms, and sometimes agrees rather to the character of remittent fever. The quartan is a much less frequent occurrence than either of the preceding types, and is most commonly a sequel to the others. It occurs late in the autumnal months, and is the most difficult of cure, probably from its being strengthened by nihil.



The diagnosis in intermittents, is in general not difficult. it only becomes so in the ataxic forms, where the disease simulates some other affection, as apoplexy, coma, convulsions, &c. here the regularity of the recurrence of the paroxysms, the previous history of the case, the season of the year, the prevalence of intermittents at the time, and the circumstances of exposure, will enable us to form a correct diagnosis. The only disease which bears a close resemblance to the regular types of intermittent is hectic fever, they may however be readily distinguished, hectic does not so uniformly consist of the cold, hot, and sweating stages. the circumscribed spot of redness on the cheek, the absence of head ache, and the sharpness of the mind in hectic, will also assist us in forming the diagnosis. hectic usually occurs as a consequent to some previous injury or disease, the pulse does not subside entirely with the paroxysm, the tongue is clean, and the appetite not much impaired. these marks will generally be



sufficiently distinctive of the disease.

In this climate the prognosis is generally favourable. Among the symptoms of a favourable character are, short paroxysms, with a full and perfect apyrexia, the paroxysms occurring later on each succeeding day, the deposition of a tuberculous sediment in the urine. The age of the patient is also to be taken into view. In young persons the disease is more easily arrested than in those of more advanced life.

The unfavourable signs are anticipating paroxysms, imperfect intermissions, assuming the character of a remittent fever, visceral derangements, symptoms of coma, apoplexy, or convulsions, occurring, great prostration of strength and typhoid depression. When death takes place in intermittents, it mostly occurs in the cold stage, the appearances presented on examination after death are very variable;

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The spleen is often found indurated and enlarged, the pancreas and liver are occasionally found in the same condition. we are acquainted with no appearances however, which can be considered pathognomic of the disease.

The causes which predispose the body to the attacks of intermittent fever, are all those which tend to induce weakness in general, and particularly the functions of the alimentary canal, as heat, cold combined with moisture, scanty food, or of an inferior quality, intemperance in eating or drinking, great fatigue, grief and other depressing passions, loss of sleep &c.

The great exciting cause of intermittents is marsh miasma, or malaria, this is probably the real exciting cause of the disease in all cases. the other causes which have been supposed to have this effect acting principally, by inducing that state of the system, which is favourable to the action of the miasmata.



The nature of this miasma is involved in  
obscurity, chemical analysis has never been  
able to detect its presence, or to obtain it in an  
isolated form. By some it is supposed to be a  
gaseous substance, if it were so, it could scarcely  
have so long ended the researches of chemistry,  
Others suppose it to be merely an effluvia or  
odour, and others again think it to be animal  
curar. The facts known respecting miasmata it  
appears to me can be more easily explained  
on this last supposition, than on either of the  
others. Whatever be the nature of miasma how-  
ever, it is a product of vegetable putrefaction,  
and may be produced in any situation, where  
there is heat, moisture, and a quantity of  
vegetable matter. It is most abundant and  
most concentrated about marshes, and along  
stagnant water courses, because there, are to be  
found in greatest abundance, moisture and rank  
vegetables, conditions necessary to its production.



the miasmata arising the same in the nature, and a small  
 most probably it is not, it varies in its character in  
 different seasons, and in different places in the same  
 season. It is derived from various species of vegetables from which  
 the miasmata are generated man, and probably to produce  
 some effect in modifying their activity. The disease occa-  
 sioned by the miasmata arising from coffee in a state of  
 putrefaction, has been repeatedly remarked for its  
 virulence. May not the cause of the dimorphism of our  
 autumnal fever and epidemics, be sought for, in  
 some such modification of the miasmata producing  
 them, a series of careful and accurate observations  
 on this subject is a desideratum.

The treatment of enteric fever is naturally  
 divided into two parts, that which is proper during the  
 hæmorrhagic, and that to be resorted to during the inter-  
 mission, the latter only, can be considered as curative,  
 the former is, for the most part merely palliative.

When the hæmorrhage has occurred the indications are, to  
 promote its natural and speedy termination, and



is devoid of any untoward symptoms that may arise.

The first indication is answered, in the cold stage, by placing the patient in a warm bed, making warm applications to the extremities, as hot bricks to the soles of the feet, and by giving warm drinks. Stimulants are not to be resorted to in common cases, as they aggravate the succeeding hot stage. In the hot stage, diaphoretics are indicated, of these the saline waters are to be preferred, as the *Spiculus Marianus*, and the *Spiculus nitidus*. The following ulcra ment mixture is recommended by Professor Chapman.

*R. carbonate potassa*

*Acacia gummi* aa ℥i

*Tinctura opii* ℥lxxx

*Olei Mentha* ℥l x

*Aqua pura* ℥ssssss *Missa.*

Cold acidulated drinks will be found very agreeable to the patient, as lemonade, or water acidulated with cream of tartar.





Quina has been highly extolled in this stage by St. Lima, he states that it relieves the headache, shortens and abates the jet, and induces perspiration. It could not be safely resorted to, however, when there was any tendency to inflammatory action, which is very frequently the case in the intermittents of our climate. Blood letting, in the hot stage, is a remedy of much less doubtful efficacy in the disease as it occurs in our country, and will often be found extremely serviceable. It is demanded whenever there is present much activity of vascular action, or determination of blood to important organs, as the brain, lungs or liver.

It should be understood during the paroxysm, the means used will vary with the varying character of the symptoms. When danger is apprehended in the cold stage, from its violence, or long continuance, and it is found that reaction will not take place on the system, recourse must be had to stimulating articles as Carbonate of Ammonia,



form a very bloody, fetid, sanguineous, black, and  
fistulorously cancerous.

Blood letting has been recommended in this  
stage by P. de Boute of Edinburgh. I thought not  
to be commended in common cases, great relief  
will be afforded by the abstraction of blood, when  
the case is attended by heavy congestions  
of the brain, lungs, liver or other important parts.

A case came under my own notice during the last term,  
in which the patient was affected with the most  
violent & violent of the whole muscular system, during  
a cold stage, at the same time was at the same  
time excited, when was immediately put to rest,  
and the patient was quickly relieved from  
every morbid symptom, there was no recurrence  
of a similar paroxysm, and the disease speedily  
yielded to the ordinary remedies.

Thus now in the 4th stage must be considered in  
blood letting, symptoms of a disease supervening,  
cannot well be derived from bloodletting and general



and acids, such as, and a variety of, and, rather in  
the drastic purgatives, great exhaustion and  
prostration of strength will demand cordials,  
and Stimulants. In all these cases we must pre-  
scribe on general principles, as usual, according  
as they occur.

In sweating stage early remedies are, rather in  
treatment, if the diarrhoea be too profuse, and  
debility enormous, from that cause, it will be  
proper to employ tonics, as wine, &c.

It remains to speak of the treatment in the  
intermittent, as well as the various curative treatment.  
The indication now is to prevent the recurrence of  
the paroxysm. How can we do this, on fulfilling  
that indication, is not clearly known, and, indeed,  
will not be so, until we fully understand the modes  
operating of the miasmata producing the disease.  
The medicines most commonly employed, and with  
the best effect, belong to the class of tonics, and  
their use, in fact, is supposed to depend on their



giving tone to the system, but this is soon  
ruined by an increased effluvia, such as in  
m. & even cannot be accounted for in this way.  
This tonic power is then lost, we now observe  
the art agrees, seem to agree, in producing an im-  
pulsion, more or less, however, on the stomach.  
This being so affords an argument in favour  
of the opinion that the miasmata act, primarily  
on the stomach, in producing the disease.

Quinine bark, in its various forms, is undoubtedly  
the most important article now in the cure of  
intermittent fever. This article cannot set amongst  
the least of the many successful benefits conferred  
on the old world, by the discovery of this new &  
useful resource and maintained a reputation in  
this disease, which no article of the materia  
medica have ever equalled, and none has ever  
excelled.

The first time for the administration of bark  
was for a long time a subject of dispute. It seems





now to be generally admitted, that it should be given during complete apnoea, and so early in the interruption as to avoid at some time to produce its effects upon the system, before the time of the expected paroxysm.

The previous exhibition of some evacuant is, in nearly all cases, necessary. The functions of the liver are frequently in fault, and a considerable quantity of various mela are present, which, in the disordered state of the digestive apparatus,

are apt to prove a source of irritation. To effect their removal, and to restore a healthy state of the hepatic secretion, is one of our first intentions. For this purpose we resort to emetics, or purgatives, the first are the most effectual. They seem to produce an effect independent of the accumulation which they occasion. An emetic, given shortly before an expected paroxysm, will very frequently prevent its occurrence. Emetics may be used with safety in most cases, but they should not be resorted to, when there is present



tenderness of the epigastrium, thirst, or other symptoms  
of dyspepsia. A combination of a scruple of ipecacuan  
and a grain of tartar emetic forms an excellent  
emetic, which also often procures an evacuation from  
the bowels. When the emetic fails to produce this  
effect, it will be proper to follow its operation by  
a small dose of Calomel, or some mild purgative.

Mercurial Purgatives have in a great measure  
succeeded the use of emetics, as preparative to  
the administration of bark. Calomel is the  
article principally employed, and may be given  
either in combination, or alone followed by some  
laxative. Ten grains of Calomel, and fifteen of Jalap,  
forms an useful purgative. Every advantage will  
be obtained by giving from five to ten grains of  
Calomel alone, and following it in four or five  
hours, with a dose of that whole of Magnesia, or Castor  
oil. When we wish to produce a greater effect on  
the liver, and to increase the biliary secretion, we  
may give Calomel in doses of two grains every two



or the same, until the patient is cured, and  
then administer a dose of castor oil, or better, castor  
oil, with oil of sweet almond, owing to the  
nature of an inflammatory disease. When the  
oil of castor is indicated, it will be advantageously  
administered during the last stage of the disease.  
The action of a grain more complete, and efficient  
and stronger than would have been obtained with  
the administration of bark.

The system being in that momentary stage, as the  
disease, the bark may be given. The most  
convenient form of exhibition is the following:  
Divide a substance for a dose into two tablets  
to the above dose. The form of administration, and  
which presents it as the nature of the bark,  
in a very concentrated form. It may be given  
in pill, or in a slightly acidulated solution.  
Given in doses of a grain every four or six or eight  
hours, previous to an expected paroxysm, it will  
prevent, and if preventing its occurrence, as the



does may be taken and given at longer intervals  
as the patient can bear the dose, but allowing as  
an usual prescription

1. *Infusio Cinchonae* ℥℥

*Infusio* ℥℥

*Infusio* ℥℥

When the bark in substance is used it will be found  
beneficial to combine it with an aromatic as wine  
of cinnamon. An ounce of bark with the decoction  
of cinnamon to be divided into three doses, one to  
be taken every three or four hours, the last one the  
same or less the expected improvement may be  
seen in a few days. The quantity of cinnamon  
to be added is as follows.

1. *Infusio Cinchonae* ℥℥

*Infusio* ℥℥

*Infusio* ℥℥

2. *Infusio Cinchonae* ℥℥

*Infusio* ℥℥





2. cinchona 3i

Caryophyllum ʒi

Superf. utroque ʒi et. p. l. m.

3. cinchona ʒi

Acid. con. ʒi

Simen. l. m.

4. cinchona ʒi et. p. l. m.

5. Port wine, a wine glass full to be taken three times a day.

In articulation. Scarcely to be denuded surface. not been lately recommended, and promises to be serviceable in cases where this surface cannot be obtained by the stomach. A small portion of skin, in some convenient part of the body, is secured of its surface by means of a blister, and to this denuded surface the ointment is applied. It serves its indication alone, and requires to be mixed with some mild plaster, or diluted in the form of an ointment made by rubbing it up with some unctuous substance.



Many other articles have been at various times  
used, for the cure of this disease, and although  
now they can be considered at all equal to  
the bark, some of them are entitled to attention,  
as being admissible in some cases where the  
bark would be hazardous, and as substitutes  
for it, when it can not be had, or is of an  
inferior quality.

The preparations of arsenic have the highest  
reputation, and would no doubt be used more  
extensively, were it not for the dangerous nature  
of the article, and the liability to serious accidents  
in its use. In giving arsenic the same precautions  
respecting the presence of an inflammatory diathesis  
are not necessary, at least not to the same extent  
as in the administration of bark. The preparation  
most commonly employed is Fowler's solution, which  
is an arsenite of potash, it may be exhibited in  
doses of from five to ten drops, three or four times  
a day, until some effect is produced. The white



kind of medicine, or a serious acid, is considered by  
high authority, as to be a superior vehicle, to be  
given in doses of 10. to 15. a grain.

The virtues of iron is generally known of in this  
country by several respectable practitioners. Dr L.  
Jackson of Northumberland, has given an account  
of its success first in a number of cases. Its dose  
is not exactly ascertained. Dr 'Gottschalk' to whom  
belonged the merit of introducing it into notice, gave  
it in doses of five grains, three or four times a day.  
It may however be safely given in doses of a scruple  
or more.

Acids before has also been successfully used in the cure  
of that disease. The same observation may be made  
of the success in curing, cough or in chronic emphy-  
sema. The dose must be repeated, and if given in  
the form of a powder.

The natural powers and services are often aided with suc-  
cess. A powerful remedy has been often obtained from  
the same source. The name of common salt has given



which it may recover & are not recommended.

It must not be concluded that this plan may be  
with advantage. These cases will be derived from  
a combination of several of these articles than from  
their single administration.

If the disease assume a malignant type, a more  
vigorous treatment will be demanded. Iriditis &  
inflammation of the eye & the general system as  
these cases were a few, I have not seen instances,  
and other stimulating articles must be resorted to.

In cases where the system is not perfect, and the  
disease then in itself intractable, we must resort to some  
section, to be made, leading over the crystalline, followed  
by the application of a blister. By these means the  
apparent most generally, to render it complete, the type  
of the disease, fully developed and the system, we re-  
new, or other remedies.

In intractable cases kept up by the force of habit,  
and where internal disease is not present, the iride-  
ctomy, & emetics, for a succession of mornings, is





commended by Professor Chapman, as being highly successful.

The diet should be carefully attended to. The light farinaceous articles are to be preferred. Ripe fruits in small quantity may be permitted. After the disease is checked, eggs or oysters, and the lighter kinds of game and poultry, may be allowed. Care must be taken however that the patient does not overstep the bounds of moderation, as the appetite in these cases is apt to be voracious.

Persons living in miasmatic districts may often escape attacks of this disease, by the observance of certain precautions. The morning fogs and the damp air of evening should be equally avoided. The clothing should be warm and moisture and wet carefully guarded against. Breakfast should always be taken before going out of the house in the morning. It is very common in the country to take a glass of bitter, as they are called, early in the morning to guard against ague. A cup of good coffee will answer a better purpose, having all the good

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without the evil effects of the spirituous potations. The diet may be generous, but should be regular. All excesses should be avoided. Every thing, in short which would tend either directly or indirectly, to weaken the tone of the system.

I have heard it remarked by an intelligent man engaged in the tanning business, that the men he had employed in the tanyard, and particularly, in preparing the bark for the process of tanning, were seldom attacked with intermittent, or remittent, fever, even in the most sickly seasons. How far this observation may be confirmed by larger experience, I do not know.

